THURSDAY, APRIL 20, 1905.

MAN AND SCENERY.

Landscape in History and Other Essays. By Sir Archibald Geikie, F.R.S. Pp. viii+352. (London: Macmillan and Co., Ltd., 1905.) Price 8*s.* 6*d.* net.

In this collection of essays Sir Archibald Geikie has given us in a connected form some of his contributions to the study of the effect of geographical environment and geological changes, not only in determining the distribution of population and of the centres of rule and of commerce, but also in influencing literature and the interpretation of history. In some of them he treats of the part man has played in controlling and directing those forces of nature which tend to produce change on the surface of the earth, and he has added a few essays dealing with subjects which arise naturally out of such inquiries. In this way he has produced a most readable book, the several parts of which hang well together.

When we have exhausted all the available documents, sought out the meaning of all the descriptive place-names and gathered the local traditions, there remains the most trustworthy evidence of all, namely, the examination of the ground to see whether the events recorded can have occurred on the area to which they have been assigned, either under present conditions or other conditions the former existence of which we can learn from what we see. Our author gives as an example the story of the Battle of Bannockburn, where the army of Edward was compelled to crowd its attack into a narrow space because Bruce had rested his left flank on what the trained eye can see must at that time have been a morass with impassable bogs and sheets of water, though it is now dry and richly cultivated.

Estuaries and the rivers which run into them provided landing places and opened up the inland regions to the vessels of primæval man, and on their banks were sites for the settlements of the first comers and the cities of later more civilised times; while, on the other hand, mountain ranges and tangled forests separated tribes and offered an insurmountable barrier to expansion and intercourse.

Man, by cutting down or burning forests, and by draining lakes and swamps, has altered the conditions of many extensive tracts of country, changing the climate, the amount of rainfall, and the rate of waste of the hill-slopes and valleys.

The south of Scotland and parts of the north of England were once covered with small shallow pans of water like Finland, "the land of a thousand lakes." Most of these have got filled up in the British Isles, and the process of reclaiming and cultivating the areas once covered with water has been hurried on by the advance of agriculture; but history tells us how the early dwellers in these broken grounds took advantage of them in their struggles against the powerful races that from age to age invaded them. The Caledonians met the Romans on such ground, and the Scotch the English in later times; and, further south, the Saxons long held their own in the flooded fenlands against William and his Norman followers.

The mythology of Greece and of northern Europe is largely influenced by the character of the scenery in which it took shape. It was recognised that the plain of Thessaly had once been covered with a sheet of water, of which the remaining portions formed two considerable lakes. The opening of the gorge by which it was drained was attributed to Poseidon, the God of the Sea, or in later times to Hercules. Here we seem to have the tradition of an old controversy as to whether the sea, the natural operation of water running out of a lake or connected with inroads of the sea, or even artificial operations, had contributed most to bring about the draining of the area.

The snowy summits of Olympus, rising serenely above the shifting clouds into the calm, clear, blue heaven, naturally came to be regarded as the fit abode of the gods who ruled the world, and soon Olympus came to be synonymous with heaven itself.

So, also, in the countries of western and northern Europe the grandeur and ruggedness of the scenery and the "mountain gloom" are faithfully reflected in the Teutonic myths and superstitions.

Our author gives three examples of typical districts to show how a knowledge of the causes which have brought about the varied scenery of each, far from checking the free play of fancy, enhances the pleasure derived from their contemplation.

He takes first the little cake of rock which caps Slieve League in Ireland, and leads the imagination to recall the time when it extended over all the surrounding area; but it has been removed over most of the district, a patch being left here and there to indicate the wide area over which it once extended.

Then our author takes us to the Isle of Wight, and showing us the "long backs of the bushless downs," explains how they come to rise as they do from the waves and run across the island from side to side. The long story that they tell is a stimulus to the imagination that greatly heightens the pleasure derived from the scene.

Again he carries us to the flanks of Slioch and the shores of Loch Maree, and makes them tell their tale.

He then goes on to describe the influence of scenery upon our literature. Here he is, of course, dealing with a later stage of mental development, and what he gives us is chiefly a sketch of the distinguishing physical features which inspired the descriptive passages in the poets of nature.

He tells us of the simple, child-like delight in nature which was so characteristic of Chaucer. He points out the placid rural quiet of the Colne Valley, where Milton dwelt, and which inspired the two finest lyrics in the English tongue. He describes the scenery of the Ouse near Olney and Weston, so thoroughly characteristic of the southern lowlands which filled Cowper with images of rural peacefulness and gentle beauty.

He points out how the poetry of Thomson ever showed the impress of his early life in the Scottish lowlands within sight of the Cheviot and Lammermuir Hills.

© 1905 Nature Publishing Group

Our author is at his best when he comes to deal with the genius of Burns, to whom the hills and woods were not merely enjoyable scenes to be visited and described, but became part of his very being; who found in their changeful aspects the counterpart of his own variable moods, and whose feelings found vent in an exuberance of appreciation which had never before been heard in verse.

He touches lightly the descriptive passages in Scott and Wordsworth, and the ballad singers of the border, who, though mostly inspired by war-like achievements, often wove into their tales a thread of tender affection and romance. In the poems attributed to Ossian, although Highland scenery is not specially described, it forms a visible and changing background.

Our author turns from the consideration of the influence exerted by the geographical features of a country upon the development and habits of thought of its inhabitants to the discussion of the origin of those features themselves. This is a subject which has of recent years received much attention both in this country and in America. Our author describes the scenic features under several heads. Mountains and valleys may be considered as correlatives, the mountains being there because the valleys have been scooped out between them. Under lakes, we turn with interest to his views on the glacial erosion of rock basins, which he holds could be effected by land ice only. He makes, however, the qualifying remark that a terrestrial surface of crystalline rock, long exposed to the atmosphere or covered with vegetation and humus, may be so deeply corroded as for two or three hundred feet downward to be converted into loose detritus, and the ice may thus have had much of its work done for it, and would be mainly employed in clearing out the corroded débris. Whether, however, this will explain many of the rock basins of the British Isles is not very clear.

In another essay he shows what Hutton did by his theory of the earth to pave the way for the accurate scientific treatment of all those questions of the changes which the earth has undergone in attaining its present configuration. Playfair, Hall, and others helped on the work. The obvious question arising out of such speculations is, how long must it have taken to bring about such great results? and thus we are taken through the controversies as to whether uniform change, which we observe, or local and intermittent catastrophic action, of which we see proofs everywhere, have done most to bring about the results in every individual case. The physicists tell us that from a consideration of the rate at which the earth parts with its heat, of the limitation of the age of the sun, of the retardation of the earth's angular velocity by tidal friction, they are not prepared to allow such a vast age as geologists have claimed for the earth. The geologists, on the other hand, having regard to the rate at which changes on its surface are observed to be brought about by existing agents, and the time demanded for the evolution of living things, insist upon a much larger estimate of time than the physicists are prepared to allow. The confidence reposed in the accuracy of such inferences must depend upon the probability or improbability that the observer has seen enough to justify his generalisations, and that no contradictory evidence can be forthcoming.

The geologist and physicist will probably arrive at a compromise when the one admits that his calculations, based on the rate of waste, may be entirely vitiated by earth movements, which will either hurry on or retard such waste, and that life will change more rapidly with the changes of environment produced by earth movements, and when, on the other hand, the physicist has corrected his estimate of the rate at which the earth is cooling by taking more careful account of the variety of conducting material of which the earth is composed, has estimated the planetary fuel for ever being thrown into the sun from space, to say nothing of the new views of radioactivity, and has re-considered his inferences from tidal friction, which some of our highest mathematicians admit is still open to doubt.

Such speculations suggest the name of the great apostle of evolution, and an essay on the life and work of Charles Darwin follows, while a biographical sketch of Hugh Miller is fitly introduced among essays which so largely deal with the influence of a man's environment upon his imagination and writings.

In an age like this, when the relative place and value of technical and literary training are so strongly forced upon the attention of the country, an essay on science in education by one whose experience and outlook are so wide will be welcomed. Then, to bring us back to the main subject with which he commenced, he gives an interesting sketch of the building up and moulding of the Campagna and the surrounding country, fitting it for the site of many an ancient city, and at last for the eternal city so long the centre of the world.

A MAGNETIC SURVEY OF JAPAN.

A Magnetic Survey of Japan reduced to the Epoch 1895·0 *and the Sea Level.* Carried out by order of the Earthquake Investigation Committee, reported by A. Tanakadate. Pp. xii + 347 and plates. (Published by the University, Tokyo, Japan, 1904.)

THE completion of the detailed magnetic survey of a country is a task requiring great skill and industry. We congratulate Prof. A. Tanakadate and his colleagues on the successful accomplishment of a heavy piece of work, which will be welcomed by all who are interested in the science of terrestrial magnetism. The work is the result of the voluntary cooperation of sixteen observers, of whom seven are professors or assistant professors of the Imperial University, Tokyo, the others also occupying responsible positions. Prof. Tanakadate modestly only claims for himself the position of a "reporter" who has collected the work of the different parties, but we imagine that we owe to him also the detailed discussion of the results which forms an essential portion of the volume before us.

© 1905 Nature Publishing Group